

REMARKS/ARGUMENTS

Claims 7-8 and 20 were rejected over Inoue, et al. (US2002/0160625), and Hasebe, et al. (US 5,826,129). Claim 19 was rejected over the foregoing references, and further in view of Jagannathan et al.

Claims 7-16

Inoue, et al. discloses a substrate processing system comprising four separate sections: a wet processing apparatus 1; a drying apparatus 2; a wafer transferring apparatus 3; and a cassette station 4 (Fig. 1). The drying apparatus 2 comprises a protecting (anti-drying) liquid supplying source (105) for preventing a wafer from drying up (Paragraph 31 and Fig. 2).

On the contrary, the invention described in claim 7 of the present application is characterized in that both of processing solution supply means for performing a wet process and anti-drying solution supply means utilize the same substrate retaining means and therefore are comprised within the same substrate processing apparatus (wet processing unit).

Moreover, the invention described in claim 9 of the present application is characterized in that the anti-drying solution supply means supplies an anti-drying solution to a substrate in the substrate retaining means which is wet with a processing solution, and therefore is neither the wet processing apparatus 1 nor the drying apparatus 2.

Thus, the present invention is different in configuration from the invention described in Inoue, et al. According to the present invention, the anti-drying solution supply means is either comprised within the wet processing unit (Claim 7) or comprised in distinct apparatus (replacing unit) (Claim 9) which is neither the wet processing apparatus 1 (wet processing unit) nor the drying apparatus 2 (high-pressure drying unit). In contrast, in Inoue, et al. the anti-drying solution supply means is comprised within the drying apparatus 2. Such a difference enables the present invention to effectively prevent the substrate from drying by means of the anti-drying solution during the transportation of the substrate, and to permit a high-pressure drying unit to perform a high-pressure drying process in a dedicated manner.

Secondly, the present invention is different in configuration from the invention described in Inoue, et al. on the point that the apparatus in the present invention comprises an anti-drying solution supplier (158) which is separate from a rinse liquid supplier (154) (Figs. 2 and 10) and

replaces the rinse liquid adhered to the substrate with the anti-drying solution. In contrast, in the apparatus described in Inoue, et al. the substrate is transported from the wet processing apparatus 1 to the drying apparatus 2 while still wet with the rinse liquid. On the contrary, in the present invention, the substrate is prevented from damage due to the drying of the substrate by replacing the rinse liquid adhered to the substrate with the anti-drying solution which is different from the rinse liquid, after the developing solution used in the developing process has been rinsed off by the rinse liquid.

As described above, according to the present invention, the rinse liquid and the anti-drying solution are separately supplied to the substrate, which allows flexibility in selecting the kinds of the solution in accordance with the intended process. Specifically, it is possible to supply the substrate with the rinse liquid most suitable for a rinsing process, and also supply with the replacing solution, as the anti-drying solution, having a higher affinity with a high-pressure fluid than the rinse liquid.

The Examiner suggests that Hasebe, et al. discloses a developing unit having both processing and anti-drying (rinsing) solutions supply means. However, this reference has only a developing solution source and a rinse liquid source. In other words, it is equivalent to the “processing solution supply means” of the present invention, and has no means for supplying an anti-drying solution. In addition, in Hasebe, et al., there is neither a description nor any suggestion of a device or system to prevent the substrate from becoming dry.

Claims 17-20

Claim 17 has been amended and new claims 21-24 have been added. As now recited in claim 17, a developing unit performs not only developing and rinsing processes but also a replacing process. And new claim 21 recites that a replacing unit performs a replacing process after developing and rinsing.

The present invention of claims 17 and 21 is different from the invention described in the cited references in regard to its structure and its effect, for several reasons.

In the present invention, a rinsing process using a rinse liquid is carried out for the substrate transported to the high-pressure processing unit after the developing process (such as the alkaline developing process or the organic developing process), and the rinse liquid is

replaced with a replacing solution. In particular, either the substrate is rinsed using the rinse liquid and the rinse liquid is replaced with the replacing solution after the developing process in the developing unit (claim 17), or the substrate is rinsed using the rinse liquid after the developing process in the developing unit and then the rinse liquid is replaced with the replacing solution in the replacing unit (claim 21).

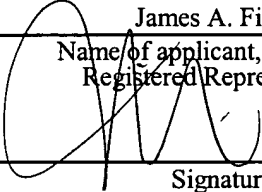
On the contrary, Inoue, et al. never discloses the technical idea of replacing the rinse liquid with a replacing solution. Further, a plurality of developing units are disclosed in Hasebe, et al., but, each of them only performs the developing process and the rinsing process. Thus, the present invention is completely different in configuration from the apparatuses described in Inoue, et al. and Hasebe, et al. at least on the point that the rinse liquid is replaced with the replacing solution.

Moreover, because of this different configuration, it is possible in the present invention to select the most suitable rinse liquid for the substrate exposed to various sorts of developing process (such as the alkaline developing process or the organic developing process) and also to supply the replacing solution having a higher affinity with a high-pressure fluid than the rinse liquid. For example, while using pure water for the rinsing process after the alkaline developing process, it is possible to use IPA (isopropyl alcohol) for the rinsing process after the organic developing process, and to use a fluorocarbon-base solution having a good affinity with the supercritical carbon dioxide as a replacing solution.

For at least the foregoing reasons, claims 7-24 are considered to be patentably distinct from the disclosures of the cited references or any combination thereof, and allowance is therefore requested.

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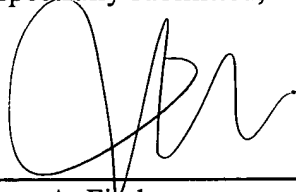
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April 26, 2005

Date of Signature

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